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# Mental Health Services

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## Effect of Social Security Payments on Substance Abuse in a Homeless Mentally Ill Cohort

*Marc I. Rosen, Thomas J. McMahon, HaiQun Lin, and Robert A. Rosenheck*

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**Objectives.** To determine whether receipt of social supplemental security income (SSI) or Social Security disability income (SSDI) disability payments is associated with increased drug and alcohol use.

**Data Sources/Study Setting.** Secondary analysis of data from 6,199 participants in the Access to Community Care and Effective Social Supports and Services demonstration for the homeless mentally ill.

**Design.** Observational, 12-month, cohort study completed over 4 years. Substance abuse and other outcomes were compared between the participants who did not receive SSI or SSDI during the 12-month study, those newly awarded benefits, and those without benefits throughout the 12 months.

**Data Collection Methods.** Social Security administrative records were used to corroborate Social Security benefit status. Drug and alcohol use were measured by self-report and clinician ratings.

**Principal Findings.** Participants who did not receive benefits significantly reduced their substance use over time. In generalized estimating equations models that adjusted for potentially confounding covariates, participants who newly received Social Security benefits showed no greater drug use than those without benefits but had significantly more days housed and fewer days employed. Participants whose benefits antedated the demonstration and continued during the 12 months had more clinician-rated drug use over time than those without benefits.

**Conclusions.** In this vulnerable population, participants with newly awarded benefits did not have any different drug use changes than those without benefits, and had relatively more days housed. The hypothesis that Social Security benefits facilitate drug use was not supported by longitudinal data in this high-risk population.

**Key Words.** Public support payments, dual diagnosis, substance abuse, Social Security, disability

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Possession of a large amount of money is a well-recognized relapse trigger (O'Brien et al. 1990; Wallace 1992), and several highly publicized reports have

suggested that Social Security Administration (SSA) benefit payments to patients disabled by psychiatric illness result in greater use of alcohol and drugs of abuse (Satel 1995; Shaner et al. 1995). Other studies have specifically focused on the increased prevalence of substance abuse and related harm around the beginning of the month, the so-called "check effect" (Grossman et al. 1997; Phillips, Christenfeld, and Ryan 1999; Catalano et al. 2000; Halpern and Mechem 2001).

However, no differences in drug use were observed in a comparison of homeless persons who received public support payments over a 3-month period and those who did not (Rosenheck, Lam, and Randolph 1997) and no increased substance use was found among homeless veterans awarded supplemental security income (SSI) or Social Security Disability Insurance (SSDI) compared with veterans whose applications were denied (Rosenheck et al. 2000). A cross-sectional analysis of 2,474 veterans enrolled in an outreach program also found no greater substance use among those receiving disability payments than among those not receiving them (Frisman and Rosenheck 1997).

It is thus possible that while receipt of disability payments alters the *timing* of substance abuse so that substance use increases when checks are received, it does not alter the total amount of abuse. Longitudinal studies are needed to better elucidate whether receipt of disability payments is associated with increased overall substance use.

The most informative longitudinal studies of the effect of disability payments on substance abuse have focused on participants in the SSA's drug addiction and alcoholism (DA&A) program (Swartz, Tonkin, and Baumohl 2003), which provided SSA benefits to beneficiaries specifically disabled by substance use until it was discontinued in 1996 (Hunt and Baumohl 2003). Two important studies have compared outcomes between DA&A beneficiaries who lost their benefits and those who continued to receive benefits for a disabling condition other than substance abuse. In one study, outcome

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Address correspondence to Marc I. Rosen, M.D., Associate Professor of Psychiatry, Yale University School of Medicine, VA Connecticut Healthcare System, Department of Psychiatry, 116A, West Haven, CT 06516. Thomas J. McMahon, Ph.D., Associate Professor of Psychiatry, is with the West Haven Mental Health Center, West Haven, CT. HaiQun Lin, M.D., Ph.D., Assistant Professor of Biostatistics, is with the Yale School of Public Health, New Haven, CT. Robert Rosenheck, M.D., Professor of Psychiatry and Public Health, is with Yale Medical School, Director of the Division of Mental Health Services and Treatment Outcomes Research in the Yale Department of Psychiatry and Director of the Department of Veterans Affairs Northeast Program Evaluation Center, NEPEC (182), West Haven, CT.

toxicology screens did not differ between those whose benefits ended and those whose benefits were renewed (Swartz, Hsieh, and Baumohl 2003b). In the other, self-report data appeared to suggest that continued receipt of SSA benefits was associated with more severe drug problems, although the authors did not come to this conclusion (Gyudish et al. 2003).

The current study is a longitudinal analysis of the relationship between receipt of Social Security benefits and subsequent substance use among participants in the access to community care and effective services and supports (ACCESS) demonstration, a 12-month outcome study involving over 7,000 homeless persons with severe mental illness in 18 U.S. communities. It differs from previous studies in that it involves a larger sample with longer follow-up, is not restricted to beneficiaries who receive disability as a result of substance abuse (the DA&A studies), and utilizes administrative Social Security records to corroborate benefit status. Homeless people with serious mental illness desperately need disability payments but are also at high risk to use such payments for alcohol and drugs. We hypothesized that participants newly awarded SSI or SSDI during the 12 months would have more subsequent drug and alcohol use over time than those not awarded SSA benefits, as evidenced by a significant group-by-time interaction.

## METHODS

### *The ACCESS Program*

In ACCESS, agencies in 18 communities in nine different states provided assertive community treatment (ACT) to approximately 7,000 homeless people with severe mental illness as part of a study of service systems integration (Randolph et al. 2002). The core features of ACT include providing diverse services in community settings, 24-hour availability, and targeting the full range of client needs (Stein and Test 1980; Lehman et al. 1997). Implementation of the ACT model in ACCESS was relatively faithful to the evidence-based model (Teague, Bond, and Drake 1998). Study participants received considerably more services after enrollment than they were receiving before enrollment, and showed marked clinical improvement in a wide range of outcome measures (Rosenheck and Dennis 2001).

One of two sites within each of nine states was randomly assigned to also receive approximately \$250,000 per year to implement systems integration strategies. However while these efforts were modestly effective at the system level (Morrissey et al. 2002), they had no significant effect on individual client

outcomes (Rosenheck et al. 2002). Thus, receipt of ACT was not affected by the implementation of special integration initiatives at half of the sites.

### *Eligibility Criteria and Sources of Data*

Participants were eligible if they were homeless, suffered from severe mental illness (Shern et al. 1994), and were not currently involved in ongoing community treatment (Rosenheck and Lam 1997). People who agreed to participate were referred to intensive case management teams that provided ACT over the next 12 months. The current analysis of ACCESS data was approved by the Yale and VA Connecticut Institutional Review Boards.

### *Sampling*

Assessments were completed upon enrollment and 3 and 12 months later. At least one follow-up assessment was collected from 6,585 of the 7,225 participants in the ACCESS study (91.1 percent)—the 3-month follow-up evaluation was completed by 5,800 (82.2 percent) and the 12-month by 5,471 (77.5 percent). The small number of participants ( $n = 386$ ) who had received SSA benefits at baseline and later lost them were excluded, leaving a sample of 6,199.

SSA benefit status was determined by a series of questions concerning how much money the participant had received from various sources in the previous 30 days. Participants who reported having received an SSI or SSDI payment were considered SSA beneficiaries at the time of the interview. Participant SSA status was classified as one of the following four mutually exclusive categories: not receiving SSA benefits throughout the study (No SSA,  $n = 3,259$ ), benefits newly acquired between 0 and 3 months (SSA 3 Months,  $n = 385$ ), benefits newly acquired between 4 and 12 months (SSA 12 Months,  $n = 819$ ), or as having had benefits throughout (SSA Throughout,  $n = 1,736$ ).

Self-reported benefit status was complemented by data on benefit status from the SSA's Commissioner for Research, Evaluation, and Statistics. SSA administrative files were matched with the date of each of the ACCESS follow-up interviews. Matches were identified between Social Security numbers of ACCESS participants and records of payments from the SSI and SSDI program files. The SSA only provided data when there was a corresponding Social Security number in SSA files, verified by dates of birth and gender. Thus, the absence of a match could indicate either that no SSA payments had been made, or that the client had provided an incorrect Social Security number.

Self-reported benefit status was validated by SSA administrative records in 97 percent (3,139/3,246) of participants who reported not receiving benefits, 59 percent (1,019/1,718) of those with benefits throughout, 35 percent (131/379) of those newly acquiring benefits between 0 and 3 months, and 52 percent (428/817) of those reporting new receipt of benefits between 4 and 12-months. The vast majority of discrepancies involved participants who reported receiving SSA benefits that were not confirmed by SSA, either because the self-report was false or because the Social Security number provided was incorrect. Overall agreement between self-report and SSA records at baseline was relatively low ( $\kappa = 0.60$ ). Thus, a subsample of 4,717 participants with matching self-report and SSA data was identified for confirmatory analyses.

### *Measurements*

Questions concerning use of illicit drugs were drawn from the Addiction Severity Index (ASI), a widely used measure of recent substance use, related problems and treatment received (McClellan et al. 1980). To complement these self-report measures, a referring clinician rated the patient's baseline substance abuse and the treating clinician rated substance use at follow-up assessments. Separate ratings were made for alcohol and other drugs on five-point clinical rating scales where 1 = abstinence, 2 = use without impairment, 3 = abuse, 4 = dependence, and 5 = severe dependence (Mueser, Drake, and Clark 1995).

Four other secondary outcome measures were collected. The primary psychiatric outcome was a composite mental health index derived from self-reported symptoms and observed signs (Rosenheck and Dennis 2001). Participants reported the number of days in the last 60 days they had been housed, and the number of days in the last 30 they had been employed. Overall quality of life was also assessed by the question, "Overall, how do you feel about your life right now?" (range = 1 ["terrible"] to 7 ["delighted"]) (Lehman 1988).

Additional measures documented basic sociodemographics: age, gender, children in residence, ethnicity, years of education, longest full-time job, and veteran status. Homelessness was characterized by age at the first episode of homelessness, number of times homeless, lifetime number of years homeless, and years living in the current city of residence. Legal status questions included questions about having ever been convicted or incarcerated. Past history of arrests (McClellan et al. 1980) and victimization (Lehman 1988) within the last 60 days were also documented. Self-report data concerning the presence or absence of 17 medical disorders, and whether the client was taking

prescribed medication were also recorded. Other self-reported symptoms quantified social support (Vaux and Athanassopoulou 1987; Lam and Rosenheck 1999a), service utilization (Rosenheck et al. 2002), a history of conduct disorder (Helzer, 1981), and stability of family of origin (Kadushin, and Martin 1981). Psychiatric diagnoses were those of the admitting clinicians on the case management teams.

### *Data Analysis*

The basic analytic strategy was to compare longitudinal patterns of substance use between each of the three SSA beneficiary groups (benefits throughout, benefits acquired between months 0 and 3, benefits acquired between 3 and 12 months) and the group that did not receive any SSA benefits in random regression models. The group by time interaction was the coefficient of central interest.

The key substance use outcomes were clinician ratings of drug and alcohol use severity, and last 30-day estimates of dollars spent on drugs and alcohol, days of drug and alcohol problems, days of crack cocaine use, and days of alcohol use to intoxication. The key clinical outcomes were the composite mental health index, days housed in the past 60, days employed in the last 30, and overall quality of life.

Data analysis proceeded in several stages. First, analysis of variance,  $\chi^2$  and multiway frequency analysis were used to describe baseline differences among clients in the four SSA benefit groups in their demographic, clinical, and treatment-seeking characteristics.

Second, baseline measures that might potentially confound comparisons among participants in the four SSA benefit groups were entered into a stepwise multinomial logistic regression in which the dependent variable represented the three groups of SSA recipients with the nonrecipients as the reference group. Because receipt of SSA benefits was not randomly assigned, a wide range of potentially confounding baseline covariates was considered. Backward elimination was used to reduce this subset of variables to a set of potential confounds that significantly ( $p < .01$ ) differentiated SSA group membership, and these variables were retained as covariates in the final analyses of change occurring over time. A statistical approach to selecting covariates was chosen because a priori selection of covariates might miss important differences between SSA groups

Preliminary analyses documented significant baseline differences between SSA groups associated with clinical site and baseline status of all of the

outcomes. As expected, baseline values of each outcome measure were also strongly associated with subsequent values of these measures. Thus, to account for possible effects of site and baseline values, covariates representing these potentially confounding differences were also entered into the final analyses of change over time.

Next, each of the outcome measures within each of the SSA groups was examined to detect whether there were significant changes over time. Differences between mean values at each of the time points (baseline versus 3-months, baseline versus 12-months, 3-months versus 12-months) within each SSA group were evaluated utilizing a simple regression model in which time was a categorical variable.

Finally, generalized estimating equations (GEE) done using the PROC GENMOD option in SAS (SAS Institute, 1999) were used to determine the relationship between SSA status and the clinical outcomes, correcting for the potentially confounding variables. A linear model was specified. Data were arranged so that each client could be represented by up to three data records (baseline, 3 and 12 months). Data were fitted to linear and quadratic models of change over time. Dummy coding of SSA benefit status was used to represent a series of planned pairwise comparisons between each of the three groups of clients who received benefits and those who did not. Main effects of group and time were included, but the interaction of greatest interest was the group-by-time interaction representing between-group differences in the rate of change over time.

The GEE analyses were repeated on the subset of participants whose self-reported SSA benefit status was confirmed by SSA data. The analyses were also repeated on the subset of participants who reported any history of recent substance use, a subgroup at especially increased risk to misuse disability payments to purchase drugs or alcohol.

## RESULTS

### *Baseline Characteristics of SSA Benefit Groups*

There were significant differences at baseline between the different groups of SSA beneficiaries and nonbeneficiaries on many measures (Table 1). In general, substance abuse was less severe and not as longstanding among those who received SSA benefits.

As expected, measures of severe, disabling medical and psychiatric illnesses which might entitle participants to SSA benefits were more frequent

Table 1: Baseline Characteristics by SSA Status

	Means or % (SD)				F or $\chi^2$	p-Value
	No SSA (N = 3,259)	SSA—0–3 months (N = 385)	SSA—4–12 months (N = 819)	SSA throughout (N = 1,736)		
<i>Demographics</i>						
Age (years) <sup>†</sup>	37.0 (9.3)	40.3 (10.5)**	39.4 (10.0)**	40.3 (9.0)**	58.1	<.0001
Gender (male)	60.6%	64.2%	62.9%	61.1%	2.6	.4531
Caucasian	42.9%	44.4%	44.4%	39.6%	7.9	.048
African American <sup>‡</sup>	45.2%	46.8%	44.4%	52.5%**	25.4	<.0001
Hispanic	6.4%	3.9%	5.0%	2.8%*	28	<.0001
Years of education	11.7 (2.4)	11.7 (2.9)	11.5 (2.6)	11.5 (2.6)*	3.5	.0159
Never married	50.1%	52.9%	52.2%	52.8%	4.5	.2149
Number of living children <sup>‡</sup>	1.1 (1.6)	0.76 (1.3)*	0.71 (1.3)**	0.87 (1.6)**	17.8	<.00001
<i>Vocational</i>						
Years held longest fulltime job <sup>†</sup>	3.7 (4.7)	3.8 (5.7)	3.5 (4.7)	3.1 (4.5)**	6.2	.0003
Age first homeless <sup>‡</sup>	30.3 (10.8)	31.9 (12.8)	32.1 (11.7)**	30.7 (11.6)	6.5	.0002
Years homeless <sup>‡</sup>	2.8 (4.6)	3.5 (5.5)	3.2 (5)	3.6 (5.5)**	9.2	<.0001
Total legal income (\$)	198.5 (331.6)	188 (370.5)	147.7 (235.8)**	552.1 (283.3)**	579.4	<.0001
Earned income (\$) <sup>†</sup>	79.3 (204)	44.8 (318.8)*	33.2 (125.6)**	24.9 (201.9)**	31.5	<.0001
Retirement income (\$) <sup>†</sup>	9.4 (96.2)	53.2 (161.8)**	17.2 (108)	10.7 (91.3)	22	<.0001
Other public support income (\$) <sup>†</sup>	70.2 (188.7)	61.9 (126.7)	67.3 (149.9)	9.0 (46.4)**	64.6	<.0001
Illegal income (\$) <sup>†</sup>	42.4 (396.8)	6.8 (54.8)	5.8 (32.6)*	8.6 (92.2)*	7.3	<.0001
Days incarcerated in last 60 <sup>†</sup>	2.1 (8.0)	2.8 (9.7)	2.0 (8.0)%	1.3 (6.1)*	5.9	.0005
<i>Psychiatric</i>						
Schizophrenia Dx <sup>‡</sup>	22.7%	52.7%**	39.6%	52.1%**	473	<.0001
Bipolar Dx	20.5%	17.1%	21.3%	20.5%	2.4	.4835
Other psychosis Dx <sup>‡</sup>	27.9%	32.5%*	37.4%	34.3%	40	<.0001
Major depression Dx <sup>‡</sup>	61.3%	35.1%**	47.0%	33.1%**	384.1	<.0001
Dually diagnosed	55.7%	44.2%	41.4%**	49.3%	66.3	<.0001



Lifetime history of suicidal ideation <sup>†</sup>	71.4%	59.8%	67.2%	60.7%*	68.2	<.0001
Lifetime psychiatric hospitalizations <sup>†</sup>	2.7 (4.9)	6.7 (13.1)**	3.4 (7.3)	8.4 (12.4)**	181	<.0001
<i>Substance use</i>						
Years of alcohol use to intoxication	6.1 (8.4)	4.8 (7.7)	5.4 (8.8)	5.4 (8.3)	5.3	.0011
Years of cannabis use	6.3 (8.3)	4.8 (7.7)*	5 (7.8)**	5.8 (8.6)	8.9	<.0001
Years of crack use	2 (3.8)	1.1 (2.8)**	1.3 (3.1)**	1.6 (3.4)*	13.2	<.0001
Used alcohol to intoxication in last 30 day	26.7%	16.6%	18.4%	21.5%	40.7	<.0001
Used crack in last 30 days	15.5%	7.3%	8.6%	11.9%	41.6	<.0001
Drug dependence Dx <sup>†</sup>	43%	30.40%	28.7%*	36.60%	74	<.0001
<i>Baseline treatment</i>						
Taking medication for medical illness <sup>†</sup>	29.7%	37.3%	35.7%	35.8%	26.7	<.0001
Psychiatric Rx in last 60 days	59.4%	76.3%*	68.5%	71.9%	105.5	<.0001
Substance abuse Rx in last 60 days <sup>†</sup>	36.1%	29.4%	24.4%*	30.4%	45.1	<.0001
<i>Medical</i>						
HIV seropositive <sup>†</sup>	2.1%	5.0%	2.6%	5.1%*	33.3	<.0001
Seizure Dx <sup>†</sup>	6.7%	8.6%	8.8%	11.3%*	32.5	<.0001

\*Indicates significant difference from No SSA group at  $p < .003$  by pairwise comparison.

\*\*Indicates significant difference from No SSA group at  $p < .001$  by pairwise comparison.

<sup>†</sup>Indicates that variable was included as a covariate in GEE analyses.

SSA, Social Security Administration; GEE, generalized estimating equations.

among those who received SSA benefits as compared with those who did not. Participants who received SSA benefits had had more psychiatric hospitalizations and were more likely to have been diagnosed with schizophrenia. Two medical illnesses that might qualify participants for SSA benefits, AIDS and a current seizure disorder, were also more common among beneficiaries.

From all the baseline data, 21 measures were identified by multinomial logistic regression that significantly ( $p < .01$ ) accounted for the variance between the SSA groups. These covariates are indicated in Table 1 with a dagger, and were included in the final GEE analyses.

#### *Change over Time within SSA Benefit Groups*

Participants who never received SSA benefits started with the highest levels of alcohol and drug use and reduced their use, with significant reductions in seven out of eight measures of substance use (Table 2, comparison of baseline versus 12 month values). Beneficiaries who received new benefits between 0 and 3 months and those receiving benefits between 4 and 12 months had fewer significant reductions in use, in part because they had lower levels of alcohol and drug use to begin with. Participants who had received SSA prior to and throughout the 12 months reduced their use on five of eight measures. All groups regardless of SSA benefit status had on average more days housed, higher quality of life and less severe psychiatric symptoms.

Changes between baseline and month 3 were larger and more often significant than changes between months 3 and 12, suggesting more rapid change during the first 3 months that asymptotically stabilized between months 3 and 12.

#### *Effect of SSA Benefits on Substance Use*

After adjusting for covariates, participants newly awarded benefits did not differ in their drug use over time when compared with those who did not have SSA benefits. The only significant differences in alcohol use were in the opposite direction from the hypothesized spike, i.e., participants who were awarded benefits between months 4 and 12 had over time *less* clinician-rated alcohol use than those without benefits (coefficient =  $-0.06$ ,  $z = 2.7$ ,  $p = .007$ ).

However, participants who received SSA benefits throughout the 12-month study had more clinician-rated drug use over time relative to those who did not have SSA benefits and trends towards a more positive slope in days of drug problems ( $p = .05$ ) and amount spent on drugs ( $p = .06$ ).

Table 2: Mean Outcomes over Time by SSA Condition

<i>Comparison</i>	<i>Baseline</i>	<i>Month 3</i>	<i>Month 12</i>	<i>p-Value Baseline versus Month 3</i>	<i>p-Value Month 3 versus Month 12</i>	<i>p-Value Baseline versus Month 12</i>
<i>Clinician drug rating</i>						
No SSA	2.09	1.89	1.85	***	NS	***
SSA throughout	2.00	2.02	1.94	NS	NS	NS
SSA 3 months	1.79	1.63	1.83	NS	NS	NS
SSA 12 months	1.77	1.67	1.71	NS	NS	NS
<i>Money spent on drugs in last 30 days</i>						
No SSA	49.68	27.08	28.72	***	NS	**
SSA throughout	45.34	30.15	19.19	NS	NS	***
SSA 3 months	9.88	11.34	15.72	NS	NS	NS
SSA 12 months	20.75	29.45	11.06	NS	NS	NS
<i>Drug problems in last 30 days</i>						
No SSA	4.29	1.98	1.94	***	NS	***
SSA throughout	2.80	1.70	1.58	***	NS	***
SSA 3 months	2.20	1.20	1.32	NS	NS	NS
SSA 12 months	2.54	1.43	1.18	***	NS	***
<i>Days of crack use in last 30 days</i>						
No SSA	1.40	0.87	0.99	***	NS	***
SSA throughout	0.78	0.81	0.66	NS	NS	NS
SSA 3 months	0.47	0.23	0.37	NS	NS	NS
SSA 12 months	0.69	0.34	0.54	*	NS	NS
<i>Clinician alcohol rating</i>						
No SSA	2.26	2.13	2.09	***	NS	***
SSA throughout	2.19	2.19	2.14	NS	NS	NS
SSA 3 months	2.11	2.02	2.01	NS	NS	NS
SSA 12 months	2.03	1.87	1.87	**	NS	**
<i>Money spent on alcohol in last 30 days</i>						
No SSA	18.44	10.98	14.20	***	NS	NS
SSA throughout	18.04	14.80	12.06	NS	NS	**
SSA 3 months	9.94	15.28	9.32	NS	NS	NS
SSA 12 months	8.38	7.18	8.27	NS	NS	NS
<i>Alcohol problems in last 30 days</i>						
No SSA	4.07	2.27	2.19	***	NS	***
SSA throughout	3.21	2.02	1.68	***	NS	***
SSA 3 months	2.90	2.19	1.42	NS	NS	**
SSA 12 months	2.72	1.63	1.28	***	NS	***
<i>Days of alcohol use to intoxication in last 30 days</i>						
No SSA	2.33	1.44	1.59	***	NS	***
SSA throughout	1.47	1.28	1.04	NS	NS	**
SSA 3 months	0.92	1.20	0.88	NS	NS	NS
SSA 12 months	1.30	0.94	0.79	NS	NS	**
<i>Mental health composite index</i>						
No SSA	0.11	-0.41	-0.52	***	***	***
SSA throughout	-0.16	-0.56	-0.67	***	***	***
SSA 3 months	-0.12	-0.59	-0.73	***	*	***

continued

Table 2: (Continued)

<i>Comparison</i>	<i>Baseline</i>	<i>Month 3</i>	<i>Month 12</i>	<i>p-Value</i>	<i>p-Value</i>	<i>p-Value</i>
				<i>Baseline versus</i> <i>Month 3</i>	<i>Month 3 versus</i> <i>Month 12</i>	<i>Baseline versus</i> <i>Month 12</i>
SSA 12 months	0.09	- 0.34	- 0.54	***	***	***
<i>Days housed in past 60 days</i>						
No SSA	11.75	23.40	35.17	***	***	***
SSA throughout	13.30	23.50	33.71	***	***	***
SSA 3 months	9.50	24.61	33.54	***	***	***
SSA 12 months	10.20	20.31	38.40	***	***	***
<i>Days worked in last 30 days</i>						
No SSA	2.80	4.51	5.83	***	***	***
SSA throughout	0.78	1.31	1.43	***	NS	***
SSA 3 months	1.28	1.28	1.53	NS	NS	NS
SSA 12 months	1.51	1.40	1.25	NS	NS	NS
<i>Quality of life score</i>						
No SSA	2.91	3.81	4.03	***	***	***
SSA throughout	3.72	4.19	4.41	***	***	***
SSA 3 months	3.48	4.34	4.48	***	NS	***
SSA 12 months	3.15	3.97	4.35	***	***	***

\**p* < .01.

\*\**p* < .005.

\*\*\**p* < .001.

SSA, Social Security Administration.

*Effects of SSA Benefits on Other Outcome Measures*

SSA beneficiaries in the “throughout” and “0- to 3-month” groups were housed significantly more and employed relatively less over time than non-beneficiaries (Table 4). These effects were robust, as participants who had benefits throughout were housed for an average of 13 more days per year (2.2 days/60 days × 365 days/year) and were employed 12 fewer days. Participants who acquired benefits between 0 and 3 months also had significantly more positive changes in subjective quality of life than nonbeneficiaries.

The sole significant change over time in mental health composite scores was a worsening (positive group × time coefficient) among participants awarded SSA between 4 and 12 months relative to nonbeneficiaries.

*Confirmatory Analyses*

The results of the GEE analysis of the subsample with administratively validated data (*n* = 4,717) were essentially the same as the analysis of all participants

Table 3: GEE Regression Coefficients Representing Monthly Change in Drug Use by SSA Recipient Groups Compared with Nonrecipients

<i>Comparison</i>	<i>Clinician-Rated Drug Use Severity</i>	<i>\$ Spent on Drugs in Last 30 Days</i>	<i>Drug Problem Days in Last 30 Days</i>	<i>Days Crack in Last 30 Days</i>
<i>Group × Time</i>				
SSA 3 months versus no SSA	-0.03 (0.03)	-2.5 (2.4)	0.1 (0.1)	-0.08 (0.05)
SSA 12 months versus no SSA	-0.02 (0.02)	7.9 (7.0)	0.1 (0.1)	-0.07 (0.05)
SSA throughout versus no SSA	0.07 (0.02)***	5.0 (2.7)	0.2 (0.10)	0.10 (0.06)
<i>Group × time squared</i>				
SSA 3 months versus no SSA	0.003 (0.002)	0.2 (0.2)	-0.009 (0.01)	0.005 (0.005)
SSA 12 months versus no SSA	0.001 (0.002)	-0.7 (0.6)	-0.01 (0.01)	0.005 (0.004)
SSA throughout versus no SSA	-0.006 (0.002)***	-0.4 (0.2)	-0.01 (0.008)	-0.009 (0.005)

Values represent parameter estimates (SE) after allowance for covariates.

\*Denotes rate of change different from No SSA group at  $p \leq .01$ .

\*\*Differs at  $p < .005$ .

\*\*\*Differs at  $p < .001$ .

SSA, Social Security Administration; GEE, generalized estimating equations.

( $n = 6,199$ ) (data available upon request). The effects of SSA benefits on drug use among the subsample at particular risk to use drugs and alcohol ( $n = 2,223$ ) were also similar to the effects of SSA benefits in the full sample.

## DISCUSSION

We tested the hypothesis that receipt of new SSA benefits is associated with increased substance use in a large sample of homeless persons with serious mental illness, and found that participants who newly received benefits during the 12-month period of data collection showed no increase in substance use, on average, and no greater substance use over time than those who did not receive SSA benefits. However, participants who had SSA benefits that antedated ACCESS had somewhat more clinician-rated drug use over time than those without benefits.

Participants' self-reported SSA benefit status and SSA records of benefit status were often discordant but this lack of agreement does not account for the lack of a "spike" in substance use when benefits were awarded. There was no greater substance use among participants newly awarded SSA benefits when the analysis was restricted to participants whose self-reported SSA benefit status was validated by SSA administrative records. Further validation of the

Table 4: GEE Regression Coefficients Representing Monthly Change in Clinical Outcomes by SSA Recipient Groups Compared with Nonrecipients

<i>Comparison</i>	<i>Days Housed in Last 60 Days</i>	<i>Mental Health Composite Index</i>	<i>Quality of Life Score</i>	<i>Days Employed in Last 30 Days</i>
<i>Group × time</i>				
SSA 3 months versus no SSA	2.3 (0.6)***	- 0.009 (0.02)	0.13 (0.04)***	- 0.9 (0.1)***
SSA 12 months versus no SSA	0.1 (0.4)	0.05 (0.01)***	0.02 (0.03)	- 0.9 (0.1)***
SSA throughout versus no SSA	1.8 (0.4)***	0.002 (0.01)	0.03 (0.02)	- 0.8 (0.1)***
<i>Group × time squared</i>				
SSA 3 months versus no SSA	- 0.2 (0.05)***	0.0002 (0.002)	- 0.009 (0.003)**	0.05 (0.01)***
SSA 12 months versus no SSA	0.04 (0.04)	- 0.004 (0.001)***	0.0001 (0.002)	0.05 (0.008)***
SSA throughout versus no SSA	- 0.1 (0.03)***	- 0.0004 (0.0009)	- 0.002 (0.002)	0.04 (0.008)***

Values represent parameter estimates (SE) after allowance for covariates.

\*Denotes rate of change different from No SSA group at  $p \leq .01$ .

\*\*Differs at  $p < .005$ .

\*\*\*Differs at  $p < .001$ .

SSA, Social Security Administration; GEE, generalized estimating equations.

SSA benefit groupings comes from the expected findings that participants who newly received benefits worked less and had greater increases in days housed than participants without benefits, and these effects were also present in both the full sample and the subsample with validated benefit status.

It is possible that the lack of a “spike” in substance use when new benefits were awarded was because of several characteristics of the ACCESS participants. First, the lack of an increase in substance use may be partially attributable to the relatively low baseline rates of substance use, although the homeless mentally ill participants at this study are indisputably at high risk to misuse SSA benefits. Furthermore, no increase in substance use was seen among a subsample of beneficiaries at especially high risk to misspend their benefits because they had acknowledged alcohol or drug use at the time of program entry. Second, participants in ACCESS were offered concomitant ACT treatment that may have helped beneficiaries channel the funds to constructive uses. Homeless mentally ill people who refused case management (Lam and Rosenheck 1999b) may have used SSA benefits less well. Third, the assignment of a representative payee to some ACCESS participants may have reduced misspending of benefits for drugs and alcohol, although a preliminary analysis of data from the first cohort of ACCESS participants found no effect of payee assignment on substance use (Rosenheck et al. 1997). It is noteworthy

that the efficacy of ACT (Drake et al. 1998) and of the assignment of a representative payee in reducing substance abuse has yet to be empirically demonstrated (Rosenheck et al. 1997; Swartz, Hsieh, and Baumohl 2003a).

The lack of a “spike” in substance use when benefits were awarded contradicts the contention that SSA benefits exacerbate substance use (Satel 1995). The vivid case reports of SSA beneficiaries spending benefit money at the beginning of the month for drugs or leaving treatment when SSA benefits are awarded would thus seem to overstate the actual effect that receipt of benefits has on overall drug use and mistakenly convey the impression that awarded funds are immediately diverted from essentials such as housing. Exaggerated fears that SSA benefits are being misspent can undermine public support for these vital programs (Rosenheck 1997). In fact, our study shows that receipt of SSA payments facilitates exit from homelessness, a widely shared goal of public support payments.

In contrast to participants newly awarded SSA benefits, participants who had had SSA benefits before and throughout the 12 months did have greater clinician-rated drug use over time than participants who did not receive SSA benefits. One interpretation of this finding is that when first acquired, SSA benefits were not used for drugs and alcohol, but that over time, some participants with SSA benefits came to use their benefits for illicit drugs, and it would be these who are at greatest risk for homelessness. Another possible interpretation is that long-term SSA beneficiaries may have had substance use problems that were more refractory to ACT than nonbeneficiaries’ substance use for reasons other than Social Security receipt. Participants who received SSA benefits before and throughout ACCESS may have become homeless because of their substance use, in spite of their having a steady source of income.

There are several limitations to our study. First, participants were not randomly assigned to receive SSA benefits and it is possible that some unmeasured factor that differentiated the groups may have suppressed substance use among new beneficiaries and contributed to the likelihood that they would receive benefits. While we cannot think of such a factor we can not rule out the impact of a confound because of selection bias. Another potential limitation is that drug use was not verified by urine toxicology tests and that SSA beneficiaries may have underreported their use. However, the accuracy of self-report among participants who continued to receive SSA benefits and those who had lost them did not significantly differ when self-report and urine toxicology data from participants in the DA&A program was analyzed (Podus et al. 2003). Furthermore, studies such as ACCESS, which have used

substance abuse ratings collected from clinicians using all available data, have found that the clinician ratings identify “true positives” missed by self-report (Drake et al. 1990; Rosenberg et al. 1998).

SSA benefits provide a vital safety net to people who need funds for housing and other necessities. Clearly, substance use among those already disabled by psychiatric illness is a major public health problem, and there is a need for future studies to elucidate how to best provide SSA benefits to maximize their benefits and minimize their possible diversion to substance use. It is intuitive to observe the high prevalence of substance use among SSA beneficiaries, and to observe the cooccurrence of substance use and check receipt at the beginning of the month and conclude that SSA benefits exacerbate substance use. However, our data suggest that SSA benefits have modest, if any effects to exacerbate substance use and the causes of substance abuse in this population lie elsewhere.

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## REFERENCES

- Catalano, R., W. McConnell, P. B. M. Forster, M. Shumway, and D. Thornton. 2000. “Does the Disbursement of Income Increase Psychiatric Emergencies Involving Drugs and Alcohol?” *Health Services Research* 35 (4): 813–2.
- Drake, R. E., G. J. McHugo, R. E. Clark, G. B. Teague, H. Xie, K. Miles, and T. H. Ackerson. 1998. “Assertive Community Treatment for Patients with Co-Occurring Severe Mental Illness and Substance Use Disorder: A Clinical Trial.” *American Journal of Orthopsychiatry* 68 (2): 201–15.
- Drake, R. E., F. C. Osher, D. L. Noordsy, S. C. Hurlburt, G. B. Teague, and M. S. Beaudett. 1990. “Diagnosis of Alcohol Use Disorders in Schizophrenia.” *Schizophrenia Bulletin* 16 (1): 57–67.
- Frisman, L. K., and R. Rosenheck. 1997. “The Relationship of Public Support Payments to Substance Abuse among Homeless Veterans with Mental Illness.” *Psychiatric Services* 48 (6): 792–5.



- Grossman, L. S., J. K. Willer, N. S. Miller, J. G. Stovall, S. G. McRae, and S. Maxwell. 1997. "Temporal Patterns of Veterans Psychiatric Service Utilization, Disability Payments, and Cocaine Use." *Journal of Psychoactive Drugs* 29 (3): 285–90.
- Guydish, J., C. Ponath, A. Bostrom, K. M. Campbell, and N. Barron. 2003. "Effects of Losing SSI Benefits on Standard Drug and Alcohol Outcome Measures." *Contemporary Drug Problems* 30 (1–2): 169–94.
- Halpern, S. D., and C. C. Mechem. 2001. "Declining Rate of Substance Abuse throughout the Month." *American Journal of Medicine* 110: 347–51.
- Helzer, J. E. 1981. "Methodological Issues in the Interpretations of the Consequences of Extreme Situations." In *Stressful Life Events and Their Contexts*, edited by D. S. A. D. B. P. Dohrenwend, pp. 108–29. New York: Prodist.
- Hunt, S. R., and J. Baumohl. 2003. "Drink, Drugs and Disability: An Introduction to the Controversy." *Contemporary Drug Problems* 30 (1–2): 9–76.
- Kadushin, C. G. B., and J. Martin. 1981. *Legacies of Vietnam. Vol. IV. Long Term Stress Reactions: Some Causes, Consequences, and Naturally Occurring Support Systems*. Washington, DC: U.S. Government Printing Office House Committee Print No. 14.
- Lam, J. A., and R. Rosenheck. 1999a. "Social Support and Service Use among Homeless Persons with Serious Mental Illness." *International Journal of Social Psychiatry* 45 (1): 13–28.
- . 1999b. "Street Outreach for Homeless Persons with Serious Mental Illness—Is It Effective?" *Medical Care* 37 (9): 894–907.
- Lehman, A. F. 1988. "A Quality of Life Interview for the Chronically Mentally Ill." *Evaluation and Program Planning* 11: 51–62.
- Lehman, A. F., L. B. Dixon, E. Kernan, B. R. DeForge, and L. T. Postrado. 1997. "A Randomized Trial of Assertive Community Treatment for Homeless Persons with Severe Mental Illness." *Archives of General Psychiatry* 54 (11): 1038–43.
- McClellan, T., L. Luborsky, G. E. Woody, and C. P. O'Brien. 1980. "An Improved Diagnostic Evaluation Instrument for Substance Abuse Patients: The Addiction Severity Index." *Journal of Nervous and Mental Disease* 168: 26–33.
- Morrissey, J. P., M. O. Calloway, N. Thakur, J. Coccozza, H. J. Steadman, and D. Dennis. 2002. "Integration of Service Systems for Homeless Persons with Serious Mental Illness through the ACCESS Program." *Psychiatric Services* 53: 949–57.
- Mueser, K. T., R. E. Drake, and R. E. Clark. 1995. "Evaluating Substance Abuse in Persons with Severe Mental Illness." Cambridge, MA: Human Services Research Institute.
- O'Brien, C. P., A. R. Childress, T. McLellan, and R. Ehrman. 1990. "Integrating Systemic Cue Exposure with Standard Treatment in Recovering Drug Dependent Patients." *Addictive Behaviors* 15 (4): 355–6.
- Phillips, D. P., N. Christenfeld, and N. M. Ryan. 1999. "An Increase in the Number of Deaths in the United States in the First Week of the Month—An Association with Substance Abuse and Other Causes of Death." *New England Journal of Medicine* 341 (2): 93–8.

- Podus, D., E. Chang, M. L. Brecht, J. A. Swartz, and M. D. Anglin. 2003. "Drug Use Prevalence among Former SSI DA&A Recipients." *Contemporary Drug Problems* 30 (1-2): 275-90.
- Randolph, F., M. Blasinsky, J. P. Morrissey, R. A. Rosenheck, J. Coccozza, and H. H. Goldman. 2002. "Overview of the ACCESS Program." *Psychiatric Services* 53 (8): 945-8.
- Rosenberg, S. D., R. E. Drake, G. L. Wolford, K. T. Mueser, T. E. Oxman, R. M. Vidaver, K. L. Carrieri, and R. Luckoor. 1998. "Dartmouth Assessment of Lifestyle Instrument (DALI)—A Substance Use Disorder Screen for People with Severe Mental Illness." *American Journal of Psychiatry* 155 (2): 232-8.
- Rosenheck, R. 1997. "Disability Payments and Chemical Dependence—Conflicting Values and Uncertain Effects." *Psychiatric Services* 48 (6): 789-91.
- Rosenheck, R., J. Lam, and F. Randolph. 1997. "Impact of Representative Payees on Substance Use by Homeless Persons with Serious Mental Illness." *Psychiatric Services* 48 (6): 800-6.
- Rosenheck, R., and J. A. Lam. 1997. "Individual and Community-Level Variation in Intensity and Diversity of Service Utilization by Homeless Persons with Serious Mental Illness." *Journal of Nervous and Mental Disease* 185 (10): 633-8.
- Rosenheck, R. A., D. J. Dausey, L. Frisman, and W. Kaspro. 2000. "Outcomes after Initial Receipt of Social Security Benefits among Homeless Veterans with Mental Illness." *Psychiatric Services* 51 (12): 1549-54.
- Rosenheck, R. A., and D. Dennis. 2001. "Time-Limited Assertive Community Treatment for Homeless Persons with Severe Mental Illness." *Archives of General Psychiatry* 58 (11): 1073-80.
- Rosenheck, R. A., J. Lam, J. P. Morrissey, M. O. Calloway, M. Stolar, and F. Randolph. 2002. "Service Systems Integration and Outcomes for Mentally Ill Homeless Persons in the ACCESS Program." *Psychiatric Services* 53 (8): 958-66.
- Satel, S. L. 1995. "When Disability Benefits Make Patients Sicker. [Comment]." *New England Journal of Medicine* 333 (12): 794-6.
- Shaner, A., T. A. Eckman, L. J. Roberts, J. N. Wilkins, D. E. Tucker, J. W. Tsuang, and J. Mintz. 1995. "Disability Income, Cocaine Use, and Repeated Hospitalization among Schizophrenic Cocaine Abusers—A Government-Sponsored Revolving Door." *New England Journal of Medicine* 333 (12): 777-83.
- Shern, D. L., A. M. Lovell, S. Tsemberis, W. Anthony, C. A. LaComb, L. Richmond, J. Winarski, and M. Cohen. 1994. *Making a Difference: Interim Status Report of the McKinney Demonstration Program for Homeless Adults with Serious Mental Illness*. Rockville, MD: Center for Mental Health Services.
- Stein, L. I., and M. A. Test. 1980. "Alternative to Mental Hospital Treatment I: Conceptual Model, Treatment Program and Clinical Evaluation." *Archives of General Psychiatry* 37 (4): 392-7.
- Swartz, J. A., C. M. Hsieh, and J. Baumohl. 2003a. "Disability Payments, Drug Use and Representative Payees: An Analysis of the Relationships." *Addiction* 98 (7): 965-7.
- . 2003b. "Disability Payments, Drug Use and Representative Payees: An Analysis of the Relationships." *Addiction* 98: 965-7.

- Swartz, J. A., P. Tonkin, and J. Baumohl. 2003. "The Methodology of the Multi-Site Study of the Termination of Supplemental Security Income Benefits for Drug Addicts and Alcoholics." *Contemporary Drug Problems* 30 (1-2): 77-122.
- Teague, G. B., G. R. Bond, and R. E. Drake. 1998. "Program Fidelity in Assertive Community Treatment: Development and Use of a Measure." *American Journal of Orthopsychiatry* 68 (2): 216-32.
- Vaux, A., and M. Athanassopulou. 1987. "Social Support Appraisals and Network Resources." *Journal of Community Psychology* 15 (4): 537-56.
- Wallace, B. C. 1992. "Treating Crack Cocaine Dependence: The Critical Role of Relapse Prevention." *Journal of Psychoactive Drugs* 24 (2): 213-22.